Predict Software Defects Before They Occur With an Intelligent Testing Tool

NTT DATA Artificial Intelligence Test Engine

Benefits:

- Provides predictive quality matrices for future releases
- Predicts future quality problems; ~90% accuracy achieved
- Identifies duplicate test cases
- Plans for advanced quality coverage
- Optimizes 25% to 40% of test cases on average

For many companies, identifying and eliminating software defects can be difficult, especially when you're working with a complex project or tight go-to-market deadline. Missing defects early in the testing cycle costs time and money, and it can even result in unhappy customers taking their business elsewhere. But what if you could predict when and where these defects occur?

The NTT DATA Artificial Intelligence (AI) Test Engine does just that. Using your historical quality assurance (QA) data, it increases testing effectiveness and reduces test cycle time. Powered by intelligent robotic automation technologies, such as machine learning, AI and natural language processing (NLP), our AI Test Engine tool's scalable architecture can be deployed on-premise or in the cloud.
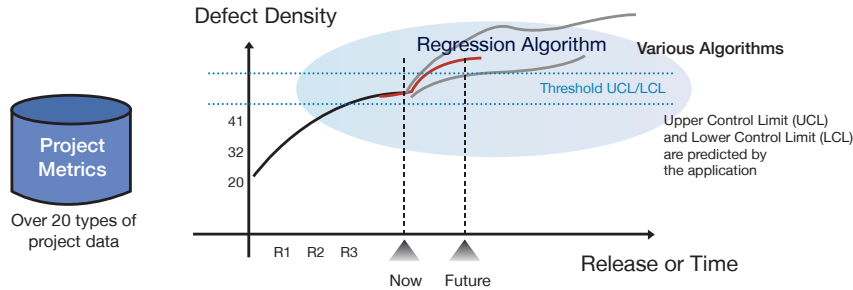
With AI Test Engine, you can:
- Identify gaps in quality and defect targets using predictive analytics
- Minimize redundancy using real-time or offline analysis of test cases
- Improve the effectiveness and efficiency of your testing processes with actionable insights

A web-based tool for analyzing historical test artifacts, such as test cases and defect metrics, AI Test Engine uses data analytics, visualization and built-in testing domain knowledge to help you make QA-centric decisions for bug-free releases. It integrates with leading project and defect management tools like Redmine, HP Application Lifecycle Management (ALM), Jira and Bugzilla to collect project defect data, metrics and other artifacts. Built on technologies such as Jubatus, R, Python and Docker, the tool includes three modules for end-to-end quality prediction, test optimization and test coverage.

Quality prediction module

Managing and meeting a wide variety of quality metrics and key performance indicators (KPIs) in a QA project can be challenging. The quality prediction module of the AI Test Engine uses historical testing results to predict defect metrics for future releases. This enables your QA managers to take corrective actions much sooner and ensures your project meets the necessary KPIs. The tool also gives you the option to select different algorithms, such as linear regression or support vector regression kernels, to help you arrive at the predicted value.

Defect Density

Regression Algorithm

Various Algorithms

Threshold UCL/LCL

Upper Control Limit (UCL) and Lower Control Limit (LCL) are predicted by the application

41
32
20

R1 R2 R3

Now Future

Release or Time
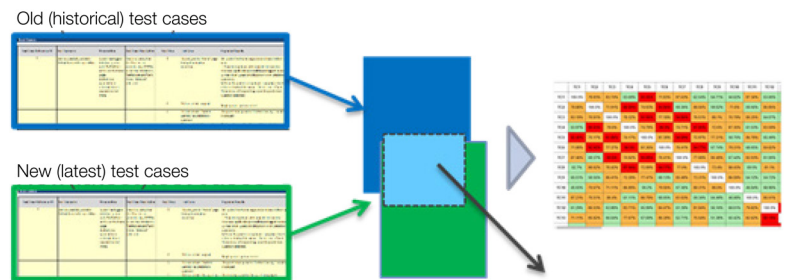
Project Metrics

Over 20 types of project data

Client success

The AI Test Engine reduces testing costs and improves software quality for our clients. The tool has helped:

- Automate testing for a leading British telecommunications company — reducing testing time per cycle by 25%
- Optimize testing for one of the largest multinational banking and financial services organizations in the U.S.
- Enhance quality prediction for a Fortune 100 retirement financial services organization

Test optimization module

Test case repositories (such as HP Quality Center or Jira) can get overrun with assets and, in most cases, contain duplicate or redundant test cases. The AI Test Engine compares test cases and alerts your QA manager to skip any duplicate test cases — without risking product quality. Using our test optimization matrix, AI Test Engine compares test cases and provides a color-coded percentage match. This process helps you identify duplicates, redundancies and good test cases, reducing the effort spent in testing.

Old (historical) test cases

New (latest) test cases

> Increase testing effectiveness and reduce test cycle time with a comprehensive solution for quality prediction, test optimization and test coverage.

Test coverage module

When implementing testing processes, you need to ensure your test cases are well written and sufficiently cover your requirements. The AI Test Engine uses intelligent automation to compare test cases to your requirements. The resulting dashboard not only indicates your success rate in mapping test cases to the requirements, but it also gives you the ability to adjust test cases as needed. In addition, it helps your QA manager identify areas that are prone to defects.

Put large volumes of historical QA data to good use with NTT DATA

Our AI Test Engine can help you analyze and derive actionable insights from your data so you can take fast, corrective action. Based on AI and NLP, this machine learning framework gives you the power to identify gaps in quality before release, reduce the number of tests needed, increase coverage, improve testing effectiveness and create a comprehensive dashboard/reporting system for your data. Contact us today to learn more.

Visit nttdataservices.com to learn more.

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